REMARKS

Reconsideration and allowance are respectfully requested.

Claims 1-3, 5-9, 11-12, 14-21 and 23-26 are pending. Non-elected claims 14-18 and 23-26 were withdrawn from consideration by the Examiner. Applicants cancel the non-elected claims without prejudice to future prosecution of that subject matter.

The amendments are fully supported by the original disclosure and, thus, no new matter is added by their entry. The limitation of dependent claim 6 is incorporated into the independent claim. In view of this amendment, claims 2 and 6 are canceled since they no longer limit the subject matter of the independent claim. Further, claims 7-8 and 19-20 were formerly dependent on these canceled claims; thus, claims 7-8 and 19-20 are amended to depend from the independent claim.

35 U.S.C. 103 – Nonobviousness

To establish a case of prima facie obviousness, all of the claim limitations must be taught or suggested by the prior art. See M.P.E.P. § 2143.03. A claimed invention is unpatentable if the differences between it and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art. *In re Kahn*, 78 USPQ2d 1329, 1334 (Fed. Cir. 2006) citing the legal standard provided in *Graham v. John Deere*, 148 USPQ 459 (1966). The *Graham* analysis needs to be made explicitly. *KSR v. Teleflex*, 82 USPQ2d 1385, 1396 (2007). It requires findings of fact and a rational basis for combining the prior art disclosures to produce the claimed invention. See id. ("Often, it will be necessary for a court to look to interrelated teachings of multiple patents . . . and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue"). The use of hindsight reasoning is impermissible. See id. at 1397 ("A factfinder should be aware, of course, of the distortion caused by hindsight bias and must be cautious of arguments reliant upon *ex post* reasoning"). Thus, a rejection under Section 103(a) requires "some rationale, articulation, or reasoned basis to explain why the conclusion of [prima facie] obviousness is correct."

Kahn, 78 USPQ2d at 1335; see *KSR*, 82 USPQ2d at 1396. An inquiry should be made as to "whether the improvement is more than the predictable use of prior art elements according to their established functions." Id. at 1396. But a claim which is directed to a combination of prior art elements "is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art." Id. at 1396. Finally, a determination of prima facie obviousness requires a reasonable expectation of success. See *In re Rinehart*, 189 USPQ 143, 148 (C.C.P.A. 1976).

Claims 1-3, 5-9, 11-12 and 19-21 were rejected under Section 103(a) as allegedly unpatentable over Sung (EP 1172373) in view of van Loon et al. (U.S. Patent 6,713,082). Applicants traverse.

Sung relates to use of a zinc oligopeptide of six amino acids and having a MW of 800 – 1200 daltons. It does not disclose the use of di- and/or tripeptides. The zinc is involved in the onset of diabetes mellitus; it is described to have a physiological activity associated with sugar control and vigor in the body (see [0003] of Sung). The peptide is absorbed by the body, see [0012] and [0016]. Thus, the combination of zinc and oligopeptide is intended to increase absorption of Sung's composition by the human body. The function of the peptide is nothing else than to enhance absorption zinc by the body. Sung does not disclose any other use of the oligopeptide. Therefore, the primary document relates only to the use of an oligopeptide to increase the absorption of the zinc by the human body. No di- and/or tripeptides are either taught or suggested.

In contrast, Applicants' claimed invention requires the presence of (i) an insulin sensitizer and (ii) a large amount (at least 70 molar%) of peptides having a MW below 2000 daltons with a significant portion (at least 20 molar%) of peptides being di- and/or tripeptides. It is the presence of a significant proportion of such small peptides (and the optional free amino acids) that are responsible for the efficacy of the claimed composition. Here, potentiation of the insulin sensitizer's activity by small peptides (e.g., di- and/or tripeptides) is not taught or suggested by the prior art.

In particular, no insulin sensitizer is taught or suggested by Sung. And there is no teaching or suggestion in the cited document that other oligopeptides are included in the

composition (i.e., peptides smaller than six amino acids long), nor that the oligopeptides have any effect in diabetes patients to sensitize them to insulin.

van Loon relates to hydrolysates combined with the two free amino acids leucine and phenylalanine to enhance the blood insulin level in a healthy person after physical exercise (see van Loon's abstract and claim 24). Col. 1, lines 38-50, explains that this composition consisting of hydrolysate and two specified free amino acids is used to stimulate the plasma insulin response, the synthesis of muscle glycogen, and recovery when taken after exercise. van Loon has nothing to do with diabetes patients, nor does the cited document teach or suggest an insulin sensitizer in combination with small peptides (e.g., di- and/or tripeptides). The specific proportions of small peptides required by the claim are neither taught nor suggested. In the three examples, van Loon tests a group of healthy male subjects (study 1), male athletes (study 2), and male athletes (study 3). Thus, all of the subjects were non-diseased persons who would not be treated with an insulin sensitizer.

Even if the cited documents are combined as proposed in the Action, they lack any teaching or suggestion of an insulin sensitizer combined a peptide fraction of a protein hydrolysate containing small peptides (i.e., di- and/or tripeptides). Note that free amino acids are not peptides. The difference between a free amino acid and a peptide is well known to persons skilled in the art and this distinction is also cited in the definitions provided on page 8, lines 14-15, of the specification. Further, it is improper for limitations of Applicants' claims to be disregarded when comparing their invention and the prior art (see "Whether the volumes of any of these references actually expressly teach 70 molar% of these amino acid/peptide fractions to be under 2000 Da is presently deemed immaterial to that which this invention is actually even drawn to" at page 4 of the Action). Regardless of whether the Examiner deems them immaterial, the limitations of the elected product claims include (i) an insulin sensitizer and (ii) specific proportions of small peptides. It needs to be made of record in an obviousness rejection whether the claim limitations are disclosed in the cited documents because such is a prerequisite for determining the differences between the claimed invention and the prior art. See the *Graham* factors. As discussed above, Sung and van Loon fail to disclosure these limita-

tions of Applicants' claims. And in the absence of evidence to the contrary in the Action (such evidence being absent because the Examiner deemed it immaterial to perform the *Graham* analysis), it must be concluded as a matter of law from the failure by the Patent Office to carry its burden of going forward with acceptable evidence that a prima facie case of obviousness has not been established. The Examiner is urged to complete the record by complying with the requirements of *Graham* and citing where each claim limitation is found in the prior art (and explicitly admitting when claim limitations are neither taught nor suggested by the prior art).

Withdrawal of the Section 103 rejection is requested because the claimed invention would not have been obvious to the ordinarily skilled artisan at the time Applicants made their invention.

35 U.S.C. 112 – Definiteness

Claims 1-3, 5-9, 11-12 and 19-21 were rejected under Section 112, second paragraph, as being allegedly "indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention." Applicants traverse. It was alleged on pages 6-7 of the Action that "an objection over [the elected] claims was not clarified." But no response to the objection was possible in Applicants' response of April 24, 2006 because the rejection on pages 6-7 of the first Office Action did not object to any particular language except for the "use" claims. Applicants were suggested "to particularly point out and distinctly claim the subject matter to which the invention is drawn" but this admonition merely restates a requirement of Section 112. It provided no guidance for what claim limitations were considered indefinite.

Now, it was alleged in the Action that "it is not clear what the peptide fraction of a protein hydrolysate constitutes." Applicants submit that the metes and bounds of their claims, including claim 1, are clear to persons skilled in the art. A "protein hydrolysate" is a mixture of peptides and free amino acids produced by hydrolysis of protein(s) with chemical or enzymes. In general, the extent of hydrolysis determines the distribution of different lengths of peptide with the molar% of shorter peptides (e.g., di- and/or tripeptides) increasing as hydrolysis proceeds until free amino acids are liberated from the

protein(s) as hydrolysis goes to completion. See also "protein hydrolysate" as defined in *Stedman's Medical Dictionary* (attached). A "peptide fraction" is also known in the art as the part of the protein hydrolysate that comprises peptides and free amino acids. See the definition of "peptide fraction" on page 8 of the specification. Hydrolysis of protein results in a mixture of different chemicals. Its fraction containing peptide is the part or portion of the mixture that are peptides and free amino acids in their chemical structure. Reciting the limitation that "at least 70 molar% of peptides in the peptide fraction have a molecular weight below 2000 Da" is not a *fishing expedition* as characterized on page 7 of the Action. Instead, it a clear requirement imposed on the peptide fraction of claim 1 that at least 70 molar% of the peptides therein are small (i.e., MW less than 2000 Da).

Applicants request withdrawal of the Section 112, second paragraph, rejection because the pending claims are clear and definite.

Conclusion

Having fully responded to all of the pending objections and rejections contained in this Office Action, Applicants submit that the claims are in condition for allowance and earnestly solicit an early Notice to that effect. The Examiner is invited to contact the undersigned if any further information is required.

Respectfully submitted,

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protein hydrolysate
n.

A sterile solution of amino acids and peptides prepared from a protein by acid or enzymatic hydrolysis and used intravenously for the maintenance of positive nitrogen balance in severe illness, after surgery of the alimentary tract, in the diets of infants allergic to milk, or as a high-protein dietary supplement.